Alabama Department of Postsecondary Education

Chancellor's Research Report
Report 00-011

The Performance of Alabama College System Students on the Alabama Basic Skills Test

November 2000

EXECUTIVE SUMMARY

The Performance of Alabama College System Students on the Alabama Basic Skills Test

The Alabama College System seeks to provide accessible quality educational opportunities, promote economic growth, and enhance the quality of life for the people of Alabama. One indicator of whether the Alabama College System (ACS) is providing quality educational opportunities would be to compare performance on an academic achievement test between ACS students and students who did not attend an ACS institution. The Alabama Basic Skills Test (BST) is a criterion-referenced test, developed by National Computer Systems, designed to measure a student's skills in relation to an established level of performance rather than to other students who have taken the test. The Alabama State Board of Education established a minimum passing score for admission to teacher education programs of 300.

This study investigated the performance of ACS students compared with non-ACS students to determine whether there were significant differences in achievement. The study included 1,181 ACS students and 1,518 non-ACS students. **A comparison of the mean scale score for students who had attended an ACS institution (353.92) and those who had not (351.86) revealed that there was no statistical difference between the mean scale scores for the two groups. However, the percentage of ACS students passing the BST (93.2%) is statistically significantly higher than students who have not attended an ACS institution (89.0%).**

A comparison of scores by race and gender indicate differences in mean scores by race but no difference between males and females. The relationship between age of student and BST scale score was investigated and showed that there was no significant relationship.

An examination of the records of 209 students who attended an ACS institution only during the summer term (not considered an ACS student for these analyses) indicated that the majority of these students were taking regular courses and not remedial courses. While it can not be stated with certainty, the data suggest that students who are enrolled in 4-year institutions may be taking classes during the summer at ACS institutions and then transferring these credits back to their home college/university. The courses for which students enrolled during summers include Principles of Macroeconomics, Principles of Micro-economics, Applied Differential Equations, American Literature I & II, and World Literature. From this partial listing, it is clear that the students are not returning to ACS institutions to acquire the basics but rather to continue their educational programs.

In summary, the data suggest that the core preparation provided by the institutions of The Alabama College System for students intending to become teachers in Alabama public schools is comparable to the preparation received at other institutions. Alabama College System transfer students perform no differently in terms of average scores than other students on the Alabama Basic Skills Test, but the percentage passing is higher.

The Performance of Alabama College System Students on the Alabama Basic Skills Test

BACKGROUND

The Alabama Basic Skills Test is a criterion-referenced test developed by National Computer Systems. The test is designed to measure a student's skills in relation to an established level of performance rather than to other students who have taken the test. This test has been used since 1992 and is required for all students seeking admission to teacher education programs at Alabama colleges or universities.

The test consists of three major content areas; reading, writing, and mathematics. The reading portion requires students to use context clues and structural analysis to determine the meaning of unfamiliar words. Students must read short passages and identify, interpret, and evaluate various components of the passage. Familiarity with the scope of commonly used reference materials-for example, the dictionary, library card catalog, charts and graphs-is also assessed.

Writing ability is tested with a series of multiple-choice questions and through an essay in response to a given topic. The mathematics area assesses basic knowledge of arithmetic, geometry, statistics, and measurement. It is reported by NCS that most questions in the mathematics section require students to demonstrate problem-solving ability, as well as knowledge of mathematical procedures.

The test is composed of the essay and 100 multiple-choice items. Scores for the Alabama Basic Skills Test are reported on a scale from 94 to 428. A score of 428 represents the maximum score possible. A score of 94 represents the lowest score reported. The Alabama State Board of Education established a minimum passing score for admission to teacher education programs of 300. The final score is determined by combining the essay score with the multiple choice score.

The test is administered on a Saturday in January, April, July and October of each year. The registration fee for examinees is $50.

During the period November 1992 to April 1999, the Alabama State Department of Education reported that 30,611 students sat for the Alabama Basic Skills Test. The Alabama State Department of Education analyses of these data are reported in Table 1.

Table 1: Alabama Basic Skills Test*

Number Tested	Mean Scale Score	Standard Deviation	Minimum Score	Maximum Score	Percent Passing
30,611	353.8	39.0	178	428	89.5%

* Data provided by the Alabama State Department of Education

RESEARCH QUESTION

This research was conducted to determine if there was a significant performance difference on the Alabama Basic Skills Test between students who have attended an Alabama College System 2-year institution prior to transferring to a 4-year institution and students who enroll directly in an Alabama 4-year college or university (referred to as 'native students') or attended other institutions prior to sitting for the Alabama Basic Skills Test. In addition to this question, an investigation of performance by age, race and gender was undertaken to determine if there were differences in performance based on these demographic factors.

SAMPLE

The Alabama State Department of Education provided a database containing 2,699 records. There were data from three test administrations in October 1999, January 2000, and July 2000. The data from the April 2000 administration were not provided. The number of records for each administration is presented in Table 2.

Table 2: Number of Examinees by Test Date

October 1999	January 2000	July 2000
905	991	803

To determine if the data for the three administrations were consistent with the historical data provided by the Alabama State Department of Education, basic descriptive statistics were calculated. These data are provided in Table 3.

Table 3: Comparison of Sample Statistics to Historical Data

	Number Tested	Mean Scale Score	Standard Deviation	Minimum Score	Maximum Score	Percent Passing
Historical	30,611	353.80	39.00	178	428	89.5%
Sample	2,699	352.76	36.39	221	424	90.8%

An inspection of Table 3 indicates that the data for the three administrations do not appear to be meaningfully different from the data calculated from 1992 to 1999. It is interesting to note, however, that the minimum score has increased by 43 scale score points in these administrations and there was a concomitant increase in the passing percentage. Based on these data, further analyses were undertaken with the assumption that the results of such analyses would be generalizable to the longitudinal population of students who have taken the test.

METHODOLOGY

The initial database of 2,699 students provided by the Alabama State Department of Education was compared with files from the Alabama State Department of Postsecondary Education to determine which students attended an Alabama College System (ACS) institution prior to sitting for the Alabama Basic Skills Test. Student attendance at an ACS institution was defined as registering for classes for more than one quarter/semester (in 1999 the ACS institutions changed from the quarter system to the semester system) excluding summers between fall 1995 and fall 1999. In other words, if a student only attended an Alabama College System institution during summers, that student was not considered as attending an ACS institution. There were 209 students who were excluded because of summer-only attendance. These students and the courses they took during the summer terms will be discussed later in this report.

Using the selection conditions specified above, it was determined that 1,181 students who took the Alabama Basic Skills Test had attended an Alabama College System institution since 1995. It was then assumed that the remaining 1,518 students (including those who attended summers only) would be considered students native to the 4-year institution. It is recognized that some of these students may have attended a 2-year institution in another state or that some of the students may have transferred from another 4-year institution; however, given the research question under investigation, these possibilities do not impact the analyses conducted herein.

The following data were provided for all students: age, gender, ethnicity, academic standing, and BST scale score. These data were used for all analyses conducted.

The mean scores for various comparisons were used to determine if significant differences existed between various groups. Where appropriate, statistical tests were conducted; however, since statistical significance is directly related to sample size and the sample size here is large, effect sizes were also calculated. The effect size indicates whether the differences observed are meaningful in terms of the measures under investigation and is required for all articles submitted to certain journals for publication (e.g., Research in Schools, Journal of Experimental Education). The effect size is an indication of the magnitude of difference between the groups expressed as a locator on the distribution of the control variable.

RESULTS

A comparison of the mean scale score for students who had attended an ACS institution and those who had not revealed that there was no statistical difference ($t=1.462$; $df = 2697$; $p = .144$) between the mean scale scores for the two groups. The number tested and the average scale score by ACS institution is included as Appendix B. The descriptive statistics for each group are presented in Table 4.

Table 4: Mean Scale Scores for ACS and Non-ACS Students

	Number Tested	Mean Scale Score	Standard Deviation	Minimum Score	Maximum Score	Percent Passing
ACS Students	**1181**	**353.92**	**33.06**	**221**	**423**	**93.2%**
Non-ACS Students	**1518**	**351.86**	**38.74**	**228**	**424**	**89.0%**

From Table 4 it can be seen that the mean scale scores are virtually the same but the interesting finding is the passing percentage for each group. The percentage of ACS students passing the BST is statistically significantly higher than students who have not attended an ACS institution ($z = 3.74$; $p < .001$). A comparison of the distribution of scale scores shows that both distributions are very similar in terms of skewness and variance. Histograms for each group are presented as Figure 1 and Figure 2.

Figure 1: Distribution of Scale Scores for ACS Students

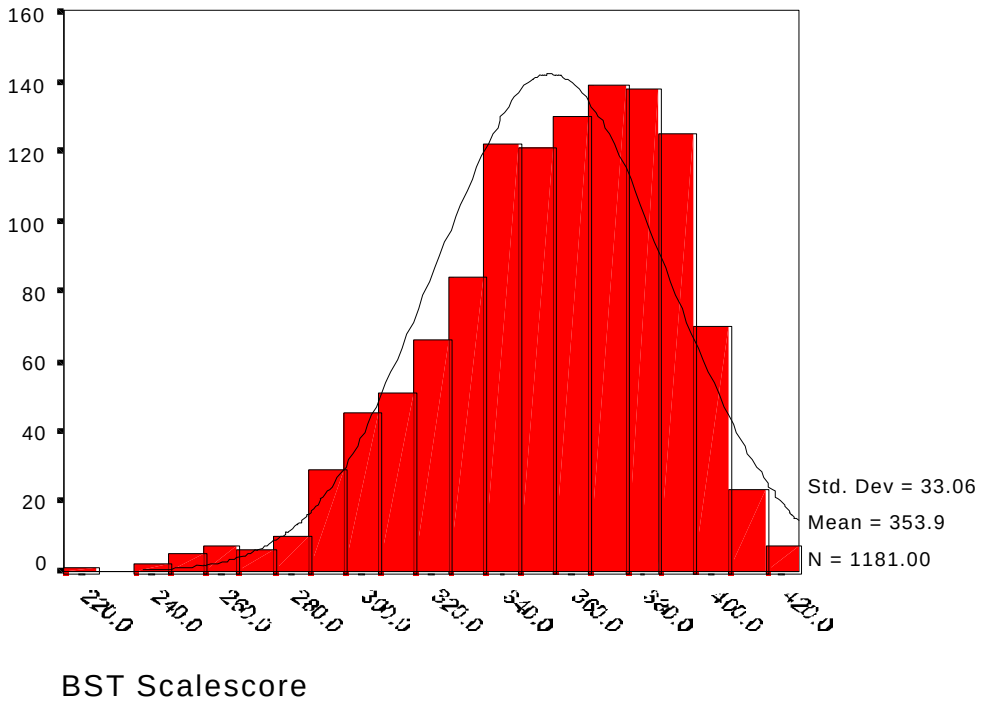
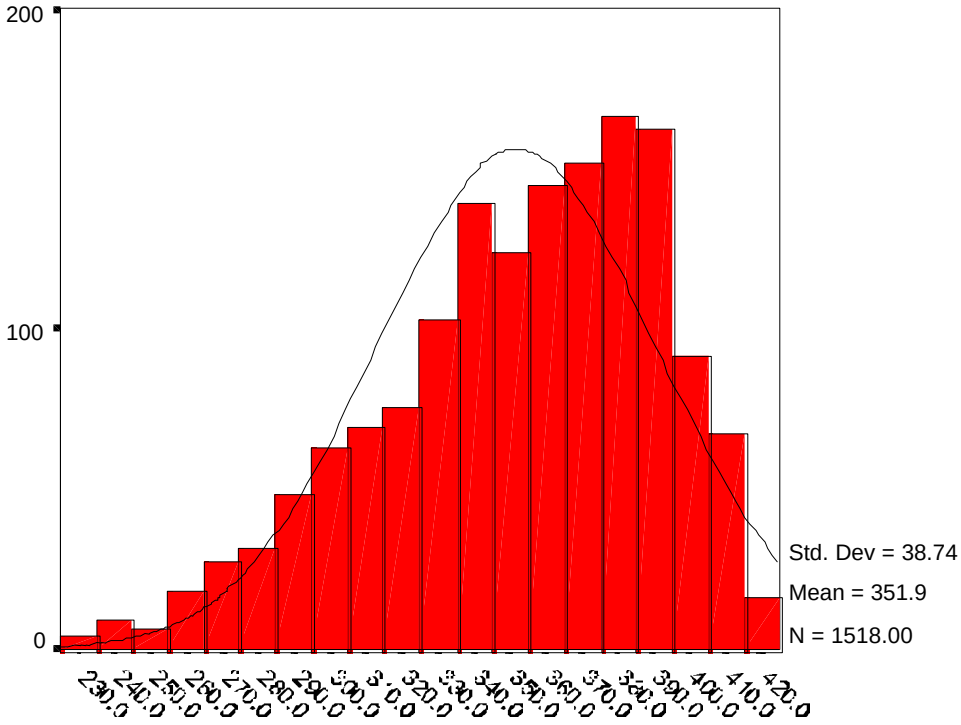


Figure 2: Distribution of Scale Scores for Non-ACS Students



A comparison of scores by race and gender indicate differences in mean scores by race but no difference between males and females.

There was a statistically significant difference between African American students and Caucasian students on the mean scale scores on the BST (t=30.77; df = 2594; p<.001). Table 6 shows the means and the effect size for this difference.

Table 5: Mean Scale Scores for African American and Caucasian Students

Ethnicity	Number	Mean Scale Score	Standard Deviation	Effect Size
Caucasian	1890	364.78	29.10	1.19
African American	706	322.90	35.11	

From Table 5 it can be seen that the mean score for Caucasian students is 1.19 standard deviations higher than the mean for African American students. This difference is meaningful and indicates a real difference in performance between these groups of students.

The investigation of differences between males and females indicated no significant difference in mean BST scale scores (t= .858; df = 2697; p = .391). Table 6 provides the descriptive data for these variables.

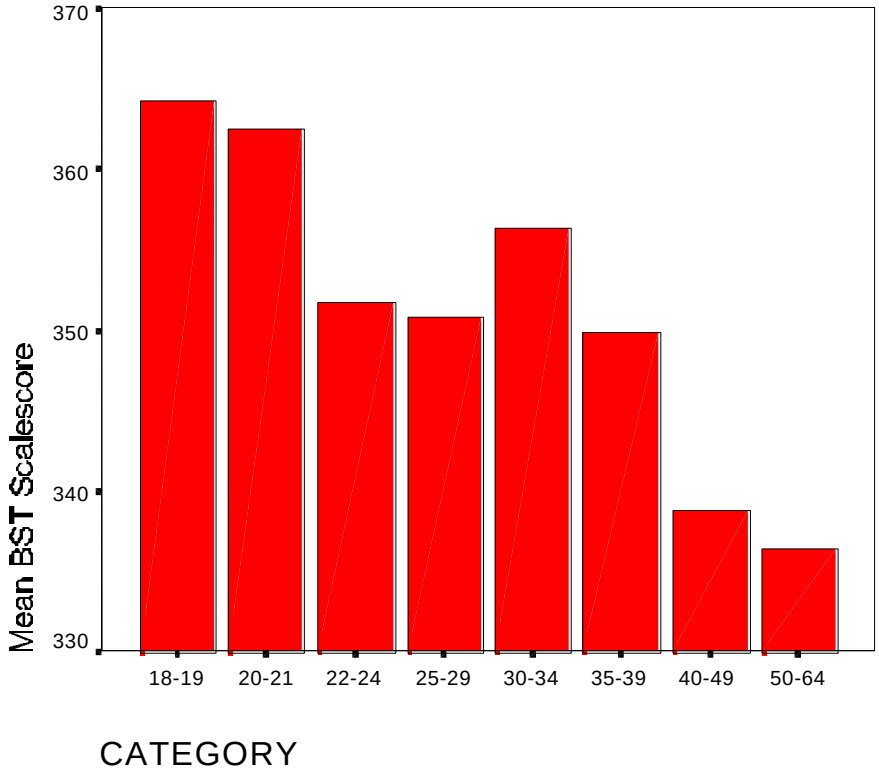
Table 6: Mean Scale Scores for Males and Females

Gender	Number	Mean Scale Score	Standard Deviation	Effect Size
Male	612	353.87	35.16	.04
Female	2087	352.44	36.78	

Appendix A provides the mean scores by gender and ethnicity for ACS and non-ACS students.

The relationship between age of student and BST scale score was investigated and showed that there was no significant relationship (r = -.031; n = 2699; p = .103). When student age was placed into categories, a trend was observed but the differences are not significant. Figure 3 shows the mean BST Scale Score by various age categories.

Figure 3: Mean BST Scale Scores by Age Category



DISCUSSION/CONCLUSIONS

From the analysis conducted it is clear that there is no difference in the performance on the Alabama Basic Skills Test between students who have attended an Alabama College System institution and those students who did not attend an ACS institution. There were no significant differences in the mean scale scores among various age groups of students nor between males and females. Significant differences were observed between African American students and Caucasian students. These differences were observed for the entire sample, and for both comparison groups.

An examination of the records of the 209 students who attended an ACS institution only during the summer term indicated that the majority of these students were taking regular courses and not remedial courses. These students do not appear to be those who had not passed the BST and were coming to an ACS institution as a method of improving test score performance. While it can not be stated with certainty, the data suggest that students who are enrolled in 4-year institutions may be taking classes during the summer at ACS institutions and then transferring these credits back to their home college/university. The courses for which students enrolled during summers include Principles of Macroeconomics, Principles of Micro-economics, Applied Differential Equations, American Literature I & II, and World Literature. From this partial listing, it is clear that these students are not returning to ACS institutions to acquire the basics but rather to continue their educational programs.

Finally, the data suggest that the core preparation provided by the institutions of The Alabama College System for students intending to become teachers in Alabama public schools is comparable to the preparation received at other institutions. Alabama College System transfer students perform no differently in terms of average scores than other students on the Alabama Basic Skills Test, but the percentage passing is higher.

APPENDIX A

	Gender	Ethnicity	Mean	N	Standard Deviation
ACS Student	**Female**	**Asian**	346.57	7	33.67
		Black	326.01	147	32.54
		Hispanic	309.67	6	45.40
		Am Indian	366.80	20	34.83
		Other	332.33	3	48.91
		White	359.15	738	30.10
		Total	353.47	924	33.33
	Male	**Asian**	367.00	1	
		Black	323.43	23	38.92
		Am Indian	364.50	2	14.85
		Other	267.00	1	
		White	359.19	229	29.17
		Total	355.56	257	32.09
	Total	**Asian**	349.13	8	32.00
		Black	325.66	170	33.36
		Hispanic	309.67	6	45.40
		Am Indian	366.59	22	33.29
		Other	316.00	4	51.59
		White	359.16	967	29.87
		Total	***353.92***	***1181***	***33.06***
Non-ACS Student	**Female**	**Asian**	348.33	6	28.98
		Black	320.60	401	35.90
		Hispanic	358.33	6	44.39
		Am Indian	338.44	9	45.58
		Other	323.45	20	26.78
		White	370.49	715	27.44
		Total	351.62	1163	39.21
	Male	**Black**	326.28	135	34.60
		Hispanic	312.00	3	35.76
		Am Indian	375.00	2	26.87
		Other	326.50	4	54.73
		White	371.24	208	25.75
		Total	352.65	355	37.22
	Total	**Asian**	348.33	6	28.98
		Black	322.03	536	35.63
		Hispanic	342.89	9	45.69
		Am Indian	345.09	11	44.19
		Other	323.96	24	31.38
		White	370.66	923	27.06
		Total	***351.86***	***1518***	***38.74***

APPENDIX A
(Continued)

Total	**Female**	**Asian**	347.38	13	30.29
		Black	322.05	548	35.08
		Hispanic	334.00	12	49.78
		Am Indian	358.00	29	39.93
		Other	324.61	23	29.09
		White	364.73	1453	29.36
		Total	352.44	2087	36.73
	Male	**Asian**	367.00	1	
		Black	325.87	158	35.15
		Hispanic	312.00	3	35.76
		Am Indian	369.75	4	18.73
		Other	314.60	5	54.36
		White	364.92	437	28.22
		Total	*353.87*	*612*	*35.16*
	Total	**Asian**	348.79	14	29.57
		Black	322.90	706	35.11
		Hispanic	329.60	15	47.04
		Am Indian	359.42	33	37.99
		Other	322.82	28	33.80
		White	364.78	1890	29.10
		Total	***352.76***	***2699***	***36.38***

APPENDIX B

BASIC SKILLS TEST
AVERAGE SCALE SCORE
BY ACS INSTITUTION

Institution	Number Tested	Average Scale Score
Northeast Alabama Community College	49	366.06
Snead State Community College	51	364.86
Calhoun Community College	131	364.38
Jefferson State Community College	61	362.36
Southern Union State Community College	70	358.53
Wallace State Community College (Hanceville)	103	357.74
Shelton State Community College	59	357.31
Alabama Southern Community College	25	357.08
Northwest-Shoals Community College	76	355.87
Central Alabama Community College	37	355.84
Alabama College System Average	**1,181**	**353.92**
Lurleen B. Wallace Junior College	36	353.83
Bevill State Community College	65	353.74
Gadsden State Community College	109	353.48
Non-ACS Institutional Average	**1,518**	**351.86**
Enterprise State Junior College	27	351.41
Wallace Community College (Dothan)	47	349.15
Faulkner State Community College	71	345.56
Bishop State Community College	45	338.56
Ayers State Technical College	1	338.00
Wallace State Community College (Selma)	26	337.96
Chattahoochee Valley Community College	46	336.50
Jefferson Davis Community College	11	334.18
Northwest-Shoals Community College (Phil Campbell)	11	328.36
Lawson State Community College	16	324.06
Trenholm State Technical College	1	321.00
Patterson State Technical College	1	311.00
Reid State Technical College	4	301.25
MacArthur State Technical College	2	295.50

Data from SDE files on BST Administrations in Oct 1999, Jan 2000, and July 2000

Basic Skills Test Update
September 11, 2002

The Performance of Alabama College System Students on the Alabama Basic Skills Test--Update

BACKGROUND

The Alabama Basic Skills Test is a criterion-referenced test developed by National Computer Systems. The test is designed to measure a student's skills in relation to an established level of performance rather than to other students who have taken the test. This test has been used since 1992 and is required for all students seeking admission to teacher education programs at Alabama colleges or universities.

The test consists of three major content areas—reading, writing, and mathematics. The reading portion requires students to use context clues and structural analysis to determine the meaning of unfamiliar words. Students must read short passages and identify, interpret, and evaluate various components of the passage. Familiarity with the scope of commonly used referenced materials—for example, the dictionary, library card catalog, charts and graphs—is also assessed.

Writing ability is tested with a series of multiple-choice questions and through an essay in response to a given topic. The mathematics area assesses basic knowledge of arithmetic, geometry, statistics, and measurement. It is reported by NCS that most questions in the mathematics section require students to demonstrate problem-solving ability, as well as knowledge of mathematical procedures.

The test is composed of the essay and 100 multiple-choice items. Scores for the Alabama Basic Skills Test are reported on a scale from 94 to 428. A score of 428 represents the maximum score possible. A score of 94 represents the lowest score reported. The State Board of Education established a minimum passing score for admission to teacher education programs of 300. The final score is determined by combining the essay score with the multiple-choice score.

SAMPLE

The State Department of Education provided a database containing 2,699 records. There were data from three test administrations in October 1999, January 2000, and July 2000. The data from the April 2000 administration were not provided. The number of records for each administration is presented in Table 1.

Table 1: Number of Examinees by Test Date

October 1999	January 2000	July 2000
905	**991**	**803**

A second database was provided in June 2002, containing 4,178 records. There were data from three administrations in April 2001, July 2001, and October 2001.

Table 2: Number of Examinees by Test Date in 2001

April 2001	July 2001	October 2001
1,090	873	2,215

To determine if the data for both sets of administrations were consistent with the historical data provided by the State Department of Education, basic descriptive statistics were calculated. These data are provided in Table 3.

Table 3: Comparison of Sample Statistics to Historical Data

	Number Tested	Mean Scale Score	Standard Deviation	Minimum Score	Maximum Score	Percent Passing
Historical	**30,611**	**353.80**	**39.00**	**178**	**428**	**89.5%**
Sample 1	**2,699**	**352.76**	**36.39**	**221**	**424**	**90.8%**
Sample 2	**4,178**	**349.43**	**38.35**	**175**	**428**	**88.5%**

An inspection of Table 3 indicates that the data for both administrations do not appear to be meaningfully different from the data calculated from 1992 to 1999.

METHODOLOGY

The second database of 4,178 students provided by the State Department of Education was compared with files from the Alabama State Department of Postsecondary Education to determine which students attended an Alabama College System (ACS) institution prior to sitting for the Alabama Basic Skills Test. Student attendance at an ACS institution was defined as registering for classes for more than one quarter/semester (in 1999 the ACS institutions changed from the quarter system to the semester system) excluding summers between fall 1998 and summer 2001. In other words, if a student only attended an Alabama College System institution during summers, that student was not considered as attending an ACS institution. There were 315 students who were excluded because of summer-only attendance.

Using the selection conditions specified above, it was determined that 1,486 students had attended an Alabama College System institution since 1998. It was then assumed that the remaining 2,377 students (including those who attended summers only) would be considered students native to the 4-year institution. It is recognized that some of these students may have attended a 2-year institution in another state or that some of the students may have transferred from another 4-year institution; however, given the research question under investigation, these possibilities do not impact the analyses conducted herein.

The mean scores for various comparisons were used to determine if significant differences existed between various groups. Where appropriate, statistical tests were conducted; however, since statistical significance is directly related to sample size and the sample size here is large, effect sizes were also calculated. The effect size indicates whether the differences observed are meaningful in terms of the measures under investigation and is required for all articles submitted to certain journals for publication (e.g., Research in Schools, Journal of Experimental Education). The effect size is an indication of the magnitude of difference between the groups expressed as a locator on the distribution of the control variable.

RESULTS

A comparison of the mean scale score for students who had attended an ACS institution and those who had not in the first sample are presented in Table 4. The same information for the second sample is presented in Table 4A. The number tested and the average scale score by ACS institution is included as Appendix A. The descriptive statistics for each group are presented in Tables 4 and 4A.

Table 4: Mean Scale Scores for ACS and Non-ACS Students for First Sample

	Number Tested	Mean Scale Score	Standard Deviation	Minimum Score	Maximum Score	Percent Passing
ACS Students	**1181**	**353.92**	**33.06**	**221**	**423**	**93.2%**
Non-ACS Students	**1518**	**351.86**	**38.74**	**228**	**424**	**89.0%**

While there is no statistically significant difference in the mean scale scores for ACS students compared with native four-year institution students ($d = .05$), the percentage of ACS students passing the BST is statistically significantly higher than students who have not attended an ACS institution ($z = 3.74; p < .001$).

Table 4A: Mean Scale Scores for ACS and Non-ACS Students for Second Sample

	Number Tested	Mean Scale Score	Standard Deviation	Minimum Score	Maximum Score	Percent Passing
ACS Students	**1486**	**353.45**	**33.04**	**194**	**422**	**93.7%**
Non-ACS Students	**2377**	**346.06**	**41.27**	**175**	**428**	**84.9%**

In the second sample, there is a statistically significant difference in the mean scores for ACS students compared with native four-year institution students ($t = 5.83; p < .001; d = .18$). The

percentage of ACS students passing the BST is, again, statistically significantly higher than students who have not attended an ACS institution ($z = 8.36; p < .001$).

DISCUSSION/CONCLUSIONS

From the analyses conducted there is a difference in the performance on the Alabama Basic Skills Test between students who have attended an Alabama College System institution and those students who did not attend an ACS institution. In the first sample there was no difference in mean test scores; however, in the second sample ACS students significantly outperformed non-ACS students. In addition, the percentage of students passing the BST is statistically and meaningfully higher for ACS students in both samples. The data suggest that the core preparation provided by the institutions of The Alabama College System for students intending to become teachers in Alabama public schools is comparable to the preparation received at other institutions. Alabama College System transfer students perform at least the same as other students on the Alabama Basic Skills Test and in the second sample, for the year 2001, they outperformed other students.

BST Study
Summary Table

	1999-2000 Non ACS Students	1999-2000 ACS Students	2000-2001 Non ACS Students	2000-2001 ACS Students
Number in Sample	**1,518**	**1,181**	**2,377**	**1,486**
Mean Score	**351.86**	**353.92**	**346.06**	**353.45**
Standard Deviation	**38.74**	**33.06**	**41.27**	**33.04**
Percent Passing	**89.0%**	**93.2%**	**84.9%**	**93.7%**